Dr. Georg B. Neurath
Microanalytical Laboratory
Hexentwiete 32
2000 Hamburg 56
West Germany

Kinetics of the Nitrosamine Formation in Tobacco Smoke.

The kinetics of the formation of nitrosamines by interaction of the nitrogen oxides and their reaction with amines are being studied by means of modern physicochemical methods (chemiluminescence). The influence of several main factors on the reactions: oxygen supply, temperature, condensation, solvents, and aqueous systems with different pH-values, are under investigation.

Reactions are followed by measurement of nitrogen oxide and nitrosamine concentrations by utilization of the chemiluminescence method and gas chromatography respectively.

Normal German blend cigarettes have been shown to deliver smoke with NO contents of 540 ng/ml smoke mean value. The minimum value was found with a flue-cured tobacco filter cigarette: 180 ng/ml. Maximum value of a Spanish black filter cigarette: 1520 ng NO/ml smoke.

The half life time of NO at 500 vpm in presence of 10% O_2 was determined to be 15 minutes.

NO_2 originally does not occur in the smoke of most cigarettes.

Adaptation of the chemiluminescence method to direct determination of nitrosamines in cigarette smoke, when present, has been undertaken.

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